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ABSTRACT

The effects of instructional interactions on preservice teachers' perceptions of teacher-student roles form their ideals of what teachers and students are supposed to do and, ultimately, what they as teachers will expect and do. The mode of instruction that predominates in the large college class tends to be lecturing, with a minimum amount of time spent by students in verbalizing, and a maximum amount of time spent in taking notes. While teacher educators speak about individualization, diversity of teaching techniques, grouping strategies, and the application of knowledge, students observe something quite different. Consequently, the explicit messages about effective teaching may be lost to preservice teachers who experience instruction in a passive, receptive mode. A model is presented of instruction that engenders active student participation and can provide preservice teachers with valuable experiences in the role of active student participant. (JD)

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THE INSTRUCTIONAL CYCLE: ON TEACHING THE TEACHER

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and Christine Burns

The overriding goal of teacher education is to foster the development of the most effective teachers possible. Teacher educators seek to achieve this goal by instructing their students in pedagogy; that is, furnishing future teachers with the knowledge and skills that research and practice have determined to be essential elements of the teaching profession. In addition, instructors in English, math, science, and other content areas share their specialized knowledge with those who will undertake a career as teacher. On a daily basis, college instructors disseminate information about the content and techniques of teaching to students as part of their teacher preparation. Along with the intended instruction, however, teacher educators may be inadvertently teaching more about teacher-student roles than they realize.

The preservice teacher has a multitude of educational experiences during college that help to shape perspectives on the appropriate behaviors of teachers and students. In most of these experiences (i.e., the typical college class) the student sits at a desk or table in a room with thirty or more other students and listens to an instructor lecturing. Although there may be occasional opportunities to ask for elaboration or clarification, the overwhelming majority of student behaviors can be classified as attending, note-taking, day-dreaming, and napping. Even though we *tell* our students that effective instruction requires the active, meaningful participation of the learner, we seldom put this information into practice.

In this paper, first, we will consider a model of the effects of instructional interactions on preservice teachers' emerging perceptions of teacher-student roles; that is, what they think teachers and students are supposed to do, and, ultimately, what they as teachers, expect and do. Second, we will examine the mode of instruction that predominates in the large, college class that preservice teachers so often encounter. Finally, we will present an alternative approach to instruction based on research on generative or elaborative processing which we feel offers great promise for the improvement of preservice teacher education.

INSTRUCTIONAL CYCLE MODEL

The development of teachers is a highly complex process, and we will make no attempt to provide a definitive or exhaustive analysis of this process. We would, however, like to highlight certain aspects of this process that we feel are important in determining how teachers come to teach the way they do. As illustrated in Figure 1, the model of the instructional cycle suggests that the instruction preservice teachers receive determines their perception of student and teacher roles. These perceptions remain

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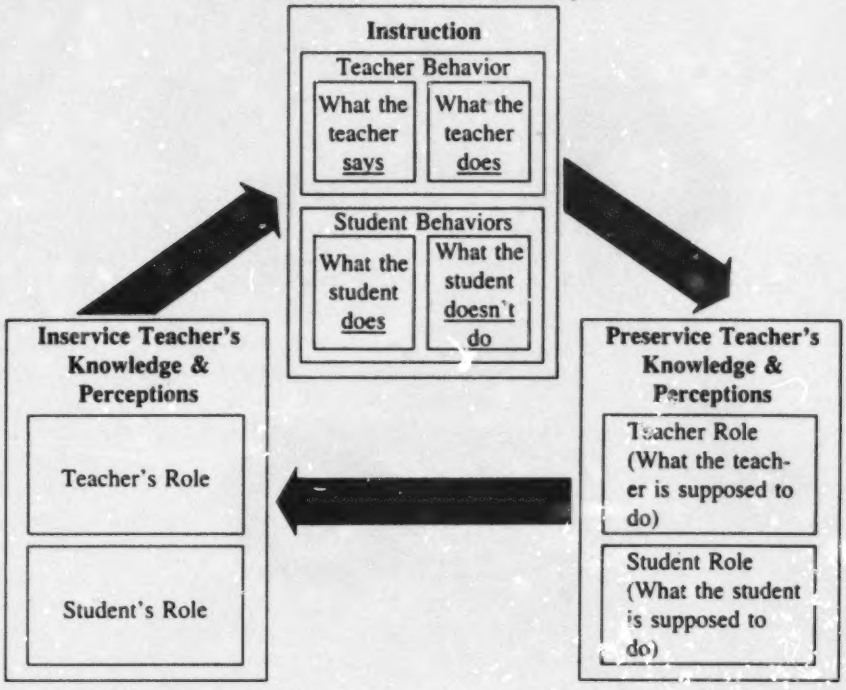
when preservice teachers cross the threshold and ultimately influence the instruction they deliver.

Figure 1.
Model of The Instructional Cycle


Instruction
Teacher Behavior
What the teacher says
What the teacher does
Student Behaviors
What the student does
What the student doesn't do
Inservice Teacher's Knowledge & Perceptions
Teacher's Role
Student's Role
Preservice Teacher's Knowledge & Perceptions
Teacher Role (What the teacher is supposed to do)
Student Role (What the student is supposed to do)

The model characterizes instruction in terms of teacher and student behaviors. If we are to understand the impact of the teacher, we must examine not only what the teacher *says*, but also what the teacher *does*. For example, for a teacher educator presenting a lecture on mastery learning, the content of the lecture, the words used, constitutes the explicit message of instruction. The way in which the lecture is delivered, and the fact that the instruction is delivered as a lecture rather than as a discussion, demonstration, or other instructional activity, makes up the implicit message of instruction.

Student behaviors are characterized in terms of what the student does and does not do. For the student attending the mastery learning lecture, listening and taking notes are likely behaviors. On the other hand, applying the information presented or generating new examples of concepts may be totally absent. The way in which students are tested is also crucial in determining what students will or will not do. If testing requires memorization rather than application, student studying behaviors are likely to be heavily rote.

The instruction that preservice teachers receive influences their perceptions of teacher and student roles. While in this paper we will focus on college instruction, it is assumed that all schooling will have an effect on role learning. It is also assumed that

the learning of the role of teacher does not develop, and cannot be conceptualized, apart from the role of student (see Biddle & Thomas, 1966, for detailed information on role development). The definitive aspect of both student and teacher roles is their interactions, what Bandura (1978) refers to as *reciprocal determinism*.

The knowledge and perceptions acquired then carry over to set the beginning teacher's expectations of teacher and student roles, which influences the instruction that the teacher delivers, completing the cycle. Although not represented in Figure 1, feedback is conceptualized as occurring at two points in the cycle. The preservice teacher's (or, for that matter, any student's) expectations of student and teacher roles will influence subsequent instructional experiences, and the inservice teacher's instructional experiences may modify and refine teacher and student roles.

What then are the implications of this instructional cycle for teacher training? If we are to nurture teachers with realistic and constructive views of teacher and student roles, we must provide instructional experiences in which we, as teacher trainers, model appropriate teacher roles. As the research on observational learning and modeling suggest (Bandura, 1977), what individuals *see* is likely to influence their behavior as much, if not more than, what they *hear*. In essence, the teaching behaviors of college instructors are as important to the development of effective teachers as the information they convey.

Teacher educators must be alert to the fact that they are modeling the teacher role even when they do not purposely intend to do so. The modeling effect is an inherent, on-going aspect of teacher-student interactions (Good & Brophy, 1984). The research of Bryan and Walbek (1970) suggests that if a discrepancy exists between what is said and what is done, students are more apt to attend to what is actually observed. Practice, in other words, is a more effective teacher than is preaching.

Given this situation, then, teacher educators need to examine what college teaching practices tell students about acceptable teaching behaviors, and the appropriateness of this information. What message do our actions send to preservice teachers, and how well does this message match the one we verbally convey? What happens to preservice teachers during their college years seems even more critical when we consider the fact that they have made the decision to become teachers and are, perhaps, more aware of the behaviors of practicing professionals. Further, there is precious little time to instill effective behaviors and essential knowledge in these future teachers. If our actions as teacher educators do not positively extend the information conveyed in classes, we may be working against ourselves, as well as against the clock.

In addition, we must provide preservice teachers with adequate opportunities to learn and practice appropriate student behaviors, especially those that serve to produce effective learning. Having briefly outlined the instructional cycle and considered the requirements of making it suit the needs of preservice teachers and their future students, we will consider how well current instructional practices meet these needs.

THE COLLEGE INSTRUCTIONAL EXPERIENCE

What, then, goes on in our college classes? One apparent trend is that more and more college teaching is being conducted in large group settings, and there is little

reason to believe this trend will soon be reversed (McKeachie, 1980). From a practical standpoint large classes help colleges cope with large enrollments and decreasing funding by reducing per pupil expenditures (Moore, 1977). Large classes are especially predominant in lower level, introductory classes. These classes provide prerequisite knowledge to students and are their first taste of college instruction.

Research has shown that the largest percentage of instructional time in large classes is spent by teachers lecturing, with a minimum amount of time spent by students verbalizing (Lewis, 1982). There is also evidence that student achievement generally decreases as class size increases (McKeachie, 1980). Although recall of factual material may hold its own in lecture classes, application of knowledge, problem-solving, and attitude differentiation appear best served through other instructional experiences (Siegel, Adams, & Macomber, 1960). Large classes also tend to produce multiple choice, matching, and other objective tests, which, though economical to grade, may contribute to a passive, rote-memorized role among students.

What does all this information suggest to teacher educators about the incidental training preservice teachers are receiving? It suggests that while teacher educators speak about individualization, diversity of teaching techniques, grouping strategies, and the application of knowledge, students observe something quite different. Consequently, the explicit messages about effective teaching may be lost to preservice teachers who experience instruction in a passive, receptive mode.

SEEKING ALTERNATIVES

In light of existing conditions in college classes, what can we as teacher educators do to break into the cycle and bring about changes in the learning and instruction of future teachers? One implication of the rapid development of the information-processing perspective and its attendent shift in the view of learning from the passive reception to the active construction of knowledge is that questions about what students *do* become paramount. Although there is little research that directly addresses this issue in relation to large college classes, there has been much research on learning from text that has focused on what the learner does. A review of this literature (Goetz, 1984) suggests that students will learn and remember more when they:

- study the text in a deep, semantic fashion
- form mental images
- construct an organized, interrelated representation
- bring to bear appropriate, prior knowledge and incorporate new information with what they already know
- process the material initially in a manner consistent with testing conditions
- engage in planning, monitoring, and regulating

Therefore, we can model instruction that engenders active student participation and can provide preservice teachers with valuable experiences in the role of active student participant.

Although the research of Wittrock (1974, 1983), Weinstein (1978, 1982), Mayer

(1975, 1979), Dansereau (1978, in press), and others has focused on the role of generative or elaborative processing in learning from text, Table 1 lists many generative activities that could be incorporated in a large class setting if we are willing to stop lecturing long enough to let our students more actively engage in the learning process. Stopping in the middle of a lecture to have students paraphrase a principle or summarize what has just been said, or to have them compose or analyze metaphors or generate new examples or analogies would provide an opportunity for generative processing. Implementing such activities in large classes, however, takes careful planning. There is simply no time to call on each student in turn. Therefore, introducing elaborative student activities requires that students work individually, in pairs, or small groups.

TABLE 1

ELABORATIONS AND GENERATIONS

Teacher or Test Elaborations	Learner Generations
Headings and subheadings	— Compose headings and subheadings
Titles	— Compose title
Familiar stories and words	—
Underlined, circled, or checked words and sentences	— Underline, circle, or check words and sentences
Questions	— Develop questions
Objectives	— Write objectives
Summaries	— Give summary
Main ideas, rules, and principles	— Abstract main ideas, rules, and principles
Relations (between parts of text and experience)	— Relate text to experience
Explanations	— Write or discuss explanations
Inferences	— Draw inferences Predict next event, outcome
Interpretations (analysis and synthesis)	— Analyze or synthesize
Metaphors	— Compose metaphors
Analogy	— Give analogy
Examples	— Provide examples
Pictures and partial pictures	— Image and draw pictures
Graphs and tables	— Prepare graph and tables
Maps	— Draw maps
Blanks	— Fill in blanks
Paraphrases	— Say in own words
Applications	— Solve problems Apply principles Discussion and related group work Discuss story Read story or partial story Act out story Retell story Evaluate story Write story

"From Wittrock, 1983"

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ELABORATIVE TECHNIQUES IN A LARGE COLLEGE CLASS: A PRELIMINARY TEST

In order to examine their efficacy, we recently implemented generative activities in an undergraduate educational psychology class of approximately 70 students (Goetz, Alexander, & Burns, 1983). To the extent possible, activities listed in Table 1 were included in each class session. The experience left several strong impressions that we would like to share.

1. Elaborative activities can be developed for most of what we teach.

During the course of the semester, elaborative activities were applied to a range of materials. For example, after discussing classical and operant conditioning, students were asked to compare and contrast the two. Students were also asked to generate new examples of contingency statements after hearing about contingencies of reinforcement (e.g., If you mow the lawn, I'll give you $5).

2. Implementing elaborative activities in large college classes is possible but certainly not trivial.

When employing elaborative activities, a balance must be found between leaving the task so open that students lack adequate guidance, and being so directive as to make active generation unnecessary. From the evaluation data gathered during the study, there was an apparent relationship between the perceived effectiveness of the activity and the clarity of presentation.

3. The effectiveness of elaborative activities in large classes reflects student differences.

The student evaluations demonstrated a wide range in the perceived effectiveness of each elaborative activity. For example, for the activity comparing and contrasting classical and operant conditioning, 12% of the students felt the activity interfered with learning, 42% felt it had no effect on learning, and 46% felt it facilitated their learning. One explanation for this discrepancy is that certain strategies may prove more or less effective for individuals based on their content knowledge and strategy repertoire.

4. Students may not be comfortable when asked to engage in elaborative activities.

Although Lewis (1982) concluded that college students preferred "innovative" teaching methods (e.g., programmed or TV instruction) over lectures, these methods brought changes in the instructional routine without major shifts in student roles. When changes occur in the role of the student, requiring more active involvement in the learning process, students may experience discomfort. It should also be acknowledged that a number of lecturers also are likely to experience discomfort at the thought of relinquishing their pulpits.

5. Students may need training in the use of elaborative activities.

The passive, receptive mode of learning may be so overlearned in college students and teachers that they will require assistance to break out of their instructional routines. To illustrate, we asked our students why Piaget's stages of cognitive development are like the development of an insect. We had hoped that insect development would

provide an analogous situation to which the newer information about cognitive development could be related. We provided a brief synopsis of insect development as an aid to those students lacking adequate knowledge of the topic. After completion, students' written responses were classified as appropriate, inappropriate literal, unrelated, or composite (cf. Vosniadou, Ortony, Reynolds, & Wilson, 1983). Of the interpretations generated by our students, 8% were unrelated, 18% inappropriate literal, 47% composite, and only 27% appropriate. Perhaps some or all of the 73% who failed to generate appropriate interpretations could benefit from training in the use of metaphorical language as a learning technique.

6. Providing adequate feedback to students is crucial.

If students sometimes generate inappropriate elaborations, provision of corrective feedback will be necessary to prevent detrimental effects (Wittrock, 1983). Cooperative student pairs and instructor-provided examples of appropriate elaborations may fill this need.

CONCLUSION

If schools are ever to fulfill their potential and become places of optimal learning rather than the objects of national concern and dismay (e.g., National Commission on Excellence in Education, 1983), we must break into the existing instructional cycle. Future teachers must learn more productive, complementary teacher-student roles. Further, teacher educators must be instrumental in bringing about this change.

As teacher educators, our greatest impact on our students, the teachers of tomorrow, will be in the instructional roles we model and the instructional experiences we provide. Since teacher educators have access to preservice teachers for only about four years following some 12 years of previous schooling, this task may prove as difficult as it is essential. It is critical, however, that we undertake this task, because students will, in any case, learn about teacher-student roles during their college experience. We cannot relegate the responsibility of constructive modeling to supervising teachers during the student teaching period. It is only through our own initiative that we can break into the instructional cycle and alter it, so that existing inadequacies are not perpetuated. To accomplish this, however, we must seek alternatives to the passive-receptive mode of instruction that is predominant in college classes. Elaborative processing research may provide such alternatives, furnishing tomorrow's teachers with more constructive modeling of teacher-student roles, and more effective learning experiences.

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FOOTNOTE

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